

### **REMARKS**

After entry of this Amendment, claims 28-35, 38-54, and 56-73 will be pending. Claims 36, 37, and 55 have been cancelled; new claims 56-73 have been added; and claims 28, 38, and 46 have been amended to clarify the scope of the invention. Independent claim 28 has been amended to include the limitations of cancelled claim 37 and independent claim 46 has been amended to include a limitation from cancelled claim 55. New independent claim 56 corresponds to dependent claim 41 as it was considered in the Office Action, new independent claim 58 corresponds to dependent claim 43 as it was considered in the Office Action, new independent claim 60 corresponds to dependent claim 47 as it was considered in the Office Action, and new independent claim 67 corresponds to dependent claim 48 as it was considered in the Office Action. Support for the claim amendments and the new claims may be found in, e.g., the originally filed claims and Figs. 3 and 10 and related text. No new matter has been added.

#### **Rejection of claims under 35 U.S.C. § 102**

Claims 28-36, 39, 40, 45, 46, and 49-54 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,646,322 to Fitzgerald (“Fitzgerald”). Independent claim 28 has been amended to include the limitations of cancelled dependent claim 37, i.e., selective removing of the SiGe layer comprising thermal oxidation performed at or below a temperature of approximately 850 °C. As the Examiner himself recognizes, Fitzgerald does not disclose any thermal oxidation temperature. *See* the Office Action, page 7. Independent claim 46 has been amended to include the limitation of providing a high-k gate dielectric, a limitation the Examiner states Fitzgerald does not disclose. *See* the Office Action, page 8. To the extent that the limitations introduced into amended independent claims 28 and 46 are rejected as obvious by the Examiner, those rejections are addressed in the next section of this Response.

Applicants submit that, for at least these reasons, amended independent claims 28 and 46 and claims dependent therefrom, are patentable over the cited prior art.

#### **Rejection of claims under 35 U.S.C. § 103**

Claims 38, 39, 47, and 48 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fitzgerald. The Examiner’s rejection appears to deal with dependent claims 37 and 38,

rather than claims 38 and 39; therefore, Applicant herein assumes claims 37, 38, 47, and 48 stand rejected over Fitzgerald. Claims 41-44 and 56 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fitzgerald in view of U.S. Patent No. 6,271,094 to Boyd et al. (“Boyd”). Applicant herein assumes the Examiner’s reference to claim 56 was meant to be to claim 55, as no claim 56 was pending at the time of the Office Action.

At the time the instant invention was made, Fitzgerald and the instant invention were owned by the same entity, AmberWave Systems Corporation. Thus, Fitzgerald is disqualified as prior art under 35 U.S.C. § 103(c). *See* MPEP § 706(1)(2).

Applicants submit that, for at least this reason, amended independent claim 28 (which includes the limitations of cancelled claim 37), amended independent claim 46 (which includes a limitation from cancelled dependent claim 55), new independent claim 56 (which corresponds to dependent claim 41 as it was considered in the Office Action), new independent claim 58 (which corresponds to dependent claim 43 as it was considered in the Office Action), new independent claim 60 (which corresponds to dependent claim 47 as it was considered in the Office Action), new independent claim 67 (which corresponds to dependent claim 48 as it was considered in the Office Action), and claims dependent therefrom, are patentable over the cited prior art.

Claims 28-44 are rejected under 35 U.S.C. § 103(a) as being unpatentable over K. Ismail, “Si/SiGe High-Speed Field Effect Transistors,” *IEEE IEDM Tech. Dig.*, pp. 509-512, 1995 (“Ismail”) in view of Chang et al., “Selective Etching of SiGe on SiGe/Si Heterostructures,” *J. Electrochem Soc.*, Vol. 138, No. 1, pp. 202-204, January 1991 (“Chang”). Ismail appears to disclose designs for SiGe-based modulation-doped field-effect transistors and metal-oxide-semiconductor field-effect transistors. *See* Ismail, Figure 7, 9, and related text. Chang appears to disclose methods for selectively etching SiGe over Si. *See* Chang, abstract. The Examiner relies on Ismail to teach all of the limitations of independent claim 28, except for selectively removing a SiGe layer to expose a strained semiconductor layer, and relies on Chang to supply this feature.

Independent claim 28 has been amended to include the limitations of cancelled dependent claim 37, the limitations of which the Examiner asserts are disclosed by Chang. Chang does not, however, teach or suggest selectively removing a SiGe layer by thermal oxidation, much less by

thermal oxidation at or below a temperature of approximately 850 °C, as recited in amended independent claim 28. Rather, Chang specifically discloses an etching technique that uses a chemical etchant to remove a SiGe layer. *See, e.g.*, Chang, abstract. The Examiner himself characterizes Chang as disclosing chemical oxidation. *See* the Office Action, pages 3 and 4. In contrast (and as understood by one of skill in the art), a thermal oxidation process involves the reaction of a layer with an oxygen-containing precursor gas at elevated temperatures.

New independent claims 56 and 58 correspond to dependent claims 41 and 43, respectively, as they were considered in the Office Action. In rejecting original dependent claim 41, the Examiner simply states that “Ismail discloses MOSFETs,” referring to Fig. 9 of Ismail. *See* the Office Action, page 3. However, Ismail discloses only MODFETs having Schottky gates, in contrast to MOSFETs, in combination with the structure of Ismail’s Figure 7 – i.e., the only structure that the Examiner asserts is obvious to form by selective etching. While Ismail does disclose a MOSFET formed on the structure illustrated in Figure 9, he utilizes this structure to teach against the shortcomings of the Figure 7 structure, including the non-planarity that the Examiner contends could be formed by selective removal of SiGe. *See* Ismail, page 20.1.3, left column. As stated at MPEP § 2141.02(VI), “A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention” (citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)). We submit that proper consideration of Ismail as a whole would teach one of ordinary skill in the art away from the invention as claimed in new independent claims 56 and 58, as Ismail discloses forming MOSFETs only on planar structures incompatible with selective removal of SiGe layers in a first region but not in a second region.

Applicants submit that, for at least these reasons, amended independent claim 28 (which includes the limitations of cancelled claim 37), new independent claim 56 (which corresponds to dependent claim 41 as it was considered in the Office Action), new independent claim 58 (which corresponds to dependent claim 43 as it was considered in the Office Action), and claims dependent therefrom, are patentable over the cited prior art.

Finally, in response to Applicants’ previous explanation why one of skill in the art would not combine Ismail and Chang, the Examiner states that “the features upon which applicant relies (i.e., smooth lines) are not recited in the rejected claim(s).” *See* the Office Action, page 5.

However, Applicants were not referring to any particular feature of the claimed invention. Rather, Applicants were contending that one of skill in the art, based on the disclosures of Ismail and Chang, would not combine the references as the Examiner suggested. The contents of the instant claims are not relevant to the combinability of the cited references.

### **CONCLUSION**

In light of the foregoing, Applicants respectfully submit that all claims are now in condition for allowance.

The Commissioner is hereby authorized to charge the excess claims fee to Deposit Account No. 07-1700. Applicants believe that no additional fees are necessitated by the present paper. However, in the event that any additional fees are due, the Commissioner is hereby authorized to charge any such fees to Deposit Account No. 07-1700.

If the Examiner believes that a telephone conversation with Applicants' agent would expedite allowance of this application, the Examiner is cordially invited to call the undersigned.

Respectfully submitted,

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